Chapter 7
The European Debt Crisis

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7.1 Introduction

In late 2009, the then recently appointed Greek Prime Minister George Papandreou announced that previous governments had failed to reveal the true size of the nation's deficits. Greece's debts were larger than what had been reported.[1] After that, the Portuguese, Spanish, and Italian public debts also became a matter of concern because their government debt-to-GDP ratios were near to the Greek one. The European sovereign debt crisis had started.

Between 2010 and 2012, Greece, Ireland, and Portugal entered into European Union and International Monetary Fund financial assistance programs, involving deep economic policy adjustments, including those pertaining to structural reforms. Spain entered into an EU financial assistance program for the recapitalization of its financial institutions, and other vulnerable countries such as Italy implemented a series of fiscal consolidation measures and some structural reforms.

The financial crisis has calmed down somewhat after the announcement by the president of the ECB, in mid-2012, that he would have done "whatever it takes" to preserve the euro and to struggle the crisis (Chap. 6, Sect. 6.5), allowing European authorities to buy time to figure out how they could get the area out of the debt crisis.

As Reinhart and Rogoff (2008) exhaustively show, financial crises and sovereign debt defaults are far from being strange events in economic history, in both less developed as well as developed countries. These authors conclude that "serial

[1] In fact, in 2004, Eurostat had already revealed that the statistics for the budget deficit had been underreported at the time Greece was accepted into the European Monetary Union in 2000. According to Eurostat, the 1999 deficit was 3.4 % of GDP instead of the originally reported 1.8 %.

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default on external debt—that is, repeated sovereign default—is the norm throughout every region in the world, even including Asia and Europe".

However, economists have paid little attention to the subject particularly during the optimistic years of the so-called Great Moderation. The current European crisis challenges economists to analyze its causes and find ways out of it as well as means to avoid future crises.

This chapter is organized as follows. Section 7.2 analyzes the origin of the crisis in these European countries. In Sect. 7.3, the specifics of euro debt are discussed. Section 7.4 analyzes the cases of Ireland and Iceland, whose debt crises preceded the Greek one. Section 7.5 is devoted to the latter. The role of a single currency on regional imbalances is underlined in Sect. 7.6. Section 7.7 is devoted to discuss what Greek can learn from the Argentine crisis. The cases of Portugal and Spain are analyzed in Sects. 7.8 and 7.9. Section 7.10 is devoted to the analysis of the Italian case. Section 7.11 discusses if the euro rate of exchange can play some role in solving the debt crisis. Section 7.12 summarizes the findings of the chapter.

7.2 Evolution of Countries' Indebtedness

A first issue has to do with the origin of the European debt crisis.[2] Some people have pointed their fingers at the American financial crisis. "This crisis was not originated in Europe," claimed the EU Commission President Jose M. Barroso, who added: "This crisis originated in North America and much of our financial sector was contaminated by ... unorthodox practices from some sectors of the financial market".[3]

However, as we shall see, Greece and Italy were already heavily indebted as early as 1996, long before the US financial crisis blew up. However, this does not exclude the possibility of some connection between both crises, which is explored below by comparing the debt situation before and after 2007.[4]

A second question is how the debtor country governments as the Greek one became so highly indebted. A common explanation for this has been the following.[5] Banks in Germany, France, and elsewhere had bought and exposed themselves massively to Greek debt because they assumed that Greek debt, like other euro area public debt, was essentially risk-free.

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[2] Moro (2014) characterizes the European crisis as a sequence of interactions between sovereign problems and banking problems. Véron (2012) adds that the situation is best described as twin sovereign and banking crises that mutually feed each other.

[3] *The Week*. June 20, 2012. http://theweek.com/article/index/229570/did-the-us-cause-the-european-debt-crisis

[4] According to Moro (2014), "the current European crisis can be directly traced back to the global financial crisis of 2007–2009, which spilled over into a sovereign debt crisis in several euro area countries in early 2010".

[5] See, for example, Feldstein (2012).

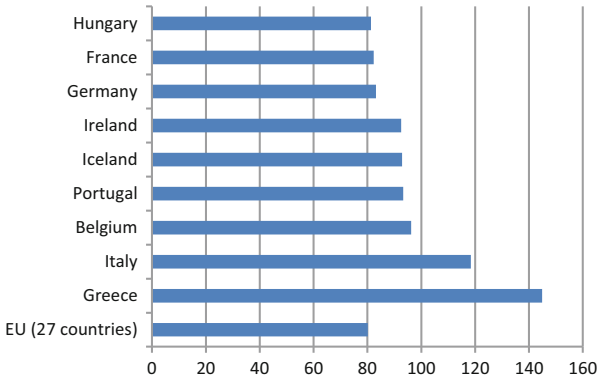

Fig. 7.1 General government gross debt (percentage of GDP)—2010 (*Source*: Eurostat)

Because the European Monetary Union (EMU) made the commitment to low inflation more credible, the introduction of the euro in 2001 caused interest rates to fall in those countries where expectations of high inflation previously kept interest rates high.

Bond buyers assumed that a bond issued by any government in the European Monetary Union was equally safe. As a result, the interest rates on Greek and Italian government bonds were not significantly different from the interest rate on German government bonds.[6] Governments responded to these low interest rates by increasing their borrowing.

However, the data do not fully endorse the former explanation. Figure 7.1 shows the general government gross debt-to-GDP ratio in 2010 for those countries whose public debt ratio exceeded the average for the 27 EU countries as a whole. France and Germany are among the more-than-average indebted countries, which show that high indebtedness is not solely a southern Europe country phenomenon.

Table 7.1 shows the evolution of government debt-to-GDP ratio between 1996 and 2010 for a selected group of countries; the last column shows the increase in that percentage between 2007 and 2010. It can be noted that some of the now highly indebted countries did not exceed the Maastricht limit of 60 % of GDP until as recently as 2007.

Second, the public debt-to-GDP ratios of Greece, Ireland, Belgium, Spain, and Italy were almost the same in 2007 as they were in 2001 (in some cases, they were even lower). This contradicts the idea that it was the introduction of the euro and the consequent fall in interest rates that stimulated governments to substantially increase their borrowing.

On the other hand, Greece, Italy, Portugal, Belgium, and Hungary had already exceeded the 60 % Maastricht limit in 2007,[7] when the American subprime crisis started. However, they shared the slowest increasing government debt-to-GDP

[6] Moro (2014) stresses the role that mispricing of risk by financial markets played in the European financial crisis.

[7] As Hungary is not a member of the Eurozone, the Maastricht criteria were not mandatory for it.

Table 7.1 Evolution of general government gross debt (percentage of GDP)—1996/2010 and 2007/2010

Country	1996	2001	2007	2008	2009	2010	2010/2007
EU (27 countries)	*69.9*	*61.0*	*59.0*	*62.5*	*74.7*	*80.1*	*35.76*
Ireland	71.7	35.1	24.8	44.2	65.2	92.5	272.98
Iceland	N/A	N/A	28.5	70.3	87.9	92.9	225.96
Romania	10.6	25.7	12.8	13.4	23.6	31.0	142.19
UK	51.3	37.7	44.4	54.8	69.6	79.9	79.95
Spain	67.4	55.6	36.2	40.1	53.8	61.0	68.51
Portugal	58.2	53.5	68.3	71.6	83.0	93.3	36.60
Greece	99.4	103.7	107.4	113.0	129.3	144.9	34.92
Hungary	72.4	52.7	67.0	72.9	79.7	81.3	21.34
Italy	120.2	108.2	103.1	105.8	115.5	118.4	14.84
Belgium	127.2	106.5	84.1	89.3	95.9	96.2	14.39

Source: Eurostat

ratios between 2007 and 2010. Even more, by 1996—before the introduction of the euro—Italy, Greece, and Belgium were already highly indebted countries.

Therefore, we can distinguish a first group of countries whose debt problems have roots before 2007 and did not worsen significantly after that year: Greece, Italy, Portugal, Belgium, and Hungary. Moreover, by 2001 Greece's public debt-to-GDP ratio was already 103.7, compared with 108.2 for Italy and 106.5 for Belgium. This last country is a special case because it is the only one in the group that reduced its debt between 2001 and 2007.

A second group is formed by those "new" highly indebted countries: Ireland and Iceland. They showed the highest rates of increase in their public debt-to-GDP ratios between 2007 and 2010 and their 2010 ratios were above the average for the EU. Romania also had a fast-growing ratio but the level of public debt attained in 2010 as a percentage of GDP was still far below the average for the EU.

The UK comes immediately below these countries with a debt-to-GDP ratio practically equivalent to the EU average. Finally, we have Spain, whose government debt-to-GDP ratio was in 2010 only a bit above the Maastricht limit and had increased at a lower rate than the UK's ratio between 2007 and 2010. However, while the UK's debt was considered to be safe, Spain's debt was no better rated than those of Portugal or Italy.

Thus, there are different cases to consider rather than a single story for European countries' indebtedness process. The idea that we may have a unique explanation for the debt crisis is also presented in Perez-Caldentey and Vernengo (2012, 3), who argue that "the crisis in Europe is the result of an imbalance between core and noncore countries that is inherent in the euro economic model". They also maintain that it was the euro, and its effects on external competitiveness, that triggered mounting disequilibria and debt accumulation in noncore countries or peripheries.

As we will see, this argument seems to be valid to a certain extent just in the cases of Greece and Portugal, but not for the rest of the countries involved in the crisis where other factors seem to have played a major role.

In what follows, we concentrate our analysis on the five euro area countries in the eye of the debt crisis storm with a casual reference to the case of Iceland.[8]

7.3 Specifics of the Euro Area Public Debt

A first peculiarity of the euro area public debt is that, strictly speaking, it is neither purely domestic nor purely external. Most of the public debt issued by euro area countries is denominated in euro and is mostly held by euro area residents. Yet, it is different from the domestic debt of countries owning their own currencies because more of it is held outside the issuing country and because the issuing country does not have full control over the currency in which the debt is denominated. Therefore, debt in the euro area can be considered to be both "foreign" and "domestic" (Gianviti et al 2010, 18).

This means that euro area public debt is not subject to the currency mismatch associated with external debt: governments have to pay their debts in the same currency they collect their revenues. However, it also means that a national government cannot revert to high inflation to rid itself of an excessive debt burden, as might be the case if the debt were strictly domestic.

The EMU seems to assume that sovereign debt crises cannot happen. At least, it has no provision for them. Moreover, the common reading of Article 125 of the Lisbon Treaty has been that it rules out the possibility of a bailout of an EU member state by other member states or by the EU.

Therefore, without these inflation and bailout channels, a country with a situation of excessive debt has only two ways out of it: severe and harmful fiscal retrenchment or default.

7.4 The New Highly Indebted Countries: The Cases of Ireland and Iceland

7.4.1 The Case of Ireland

Ireland's economy had by 2007 already become dangerously dependent on construction and housing as a source of economic growth and tax revenue. The total stock of dwellings—which had stood at 1.2 million homes in 1991 and had gradually increased to 1.4 million homes in 2000—exploded to 1.9 million homes in 2008. House completions went from 19,000 in 1990 to 50,000 in 2000 to a whopping 93,000 in 2006 (Whelan 2013, p. 6).

[8] The Cyprus banking crisis is a special case, mainly the result of the Greek sovereign debt haircut, although it has something in common with Iceland's case.

A lightly regulated financial system fed on this process. In fact, the growing construction boom was fueled by the increasing reliance of Irish banks on wholesale external borrowing at a time when international financial markets were awash with cheap investable funds. The fact that Ireland was a founder member of the euro zone brought a dramatic and sustained fall in nominal and real interest rates that stimulated the protracted building boom. Specific tax incentives boosted the overheated construction sector. From late 2003 onward, banks stimulated demand with financial innovations such as 100 % loan-to-value mortgages.

When the global economic environment changed at the beginning of 2007, Irish residential property prices started falling and kept falling during the rest of 2007 and 2008. Heavy loan losses on the development property portfolios acquired at the peak of the market became inevitable. The decline in property prices and the collapse in construction activity resulted in severe losses in the Irish banking system.

The story is not very different from the one that led to the US subprime crisis. "In their anxiety to protect market share against the competitive inroads of Anglo Irish Bank and UK-based retail lenders, their (Irish) banks' management tolerated a gradual lowering of lending standards, including decisions to authorize numerous exceptions to stated policies" (Governor of the Central Bank of Ireland 2010, 8). This was tolerated by an unduly deferential approach to the banking industry by regulators. Outside bodies such as the IMF and OECD never drew attention to the threats that lay ahead.

Although banks carried out a quantification of risks in the context of the stress test exercises reported annually to the regulatory authority, "the capacity of the banks to undertake the exercise differed greatly; indeed none of them had reliable models, tested and calibrated on Irish data, which could credibly predict loan losses under varying scenarios" (Ibid., 11).

While at the end of 2003, the net indebtedness of Irish banks to the rest of the world was just 10 % of GDP, by early 2008 borrowing, mainly for property, had jumped to over 60 % of GDP. By early 2008, Irish banks found it more difficult to maintain funding in the international wholesale markets and, at the same time, there was a more rapid pullback by domestic investors from the property market.

The severe exposure of the Irish banks to any downturn in the property market was plain to see for anyone who read their annual reports. However, as discussed in Honohan (2010), the supervisory culture at the Central Bank during this period meant there was very little supervisory interference in bank operations (Whelan 2013, p. 12).

Two weeks after Lehman Brothers announced it would file for bankruptcy protection (Chap. 11), the provision of a blanket system-wide state guarantee for Irish banks was announced. This measure was taken because of the drain of liquidity that had been affecting all Irish banks and that had brought one important bank to the point of failure.

Government spending doubled in real terms between 1995 and 2007, rising at an annual average rate of 6 %. With the economy growing at an even faster rate, this implied a generally falling or stable expenditure ratio of expenditure to GDP until

2003. However, thereafter the ratio rose, especially after output growth began to slow in 2007 and the collapse in tax revenues in 2008–2009.

Much of the reason for the revenue collapse lies in the systematic shift over the previous two decades away from stable and reliable sources such as personal income tax, VAT, and excises toward cyclically sensitive taxes as corporation tax, stamp duties, and capital gains tax. The collapse in construction activity, and the corresponding jump in unemployment, resulted in a huge loss in tax revenues as well as a big increase in social welfare payments.

In April 2009, the Irish government established the National Asset Management Agency (NAMA), with the mandate to purchase the universe of development-related loans (above a certain value) from banks. This category of loans was the main source of uncertainty concerning total loan losses. During 2009–2010, NAMA purchased most of these loans at a steep average discount, but this meant that banks required substantial upfront recapitalization programs, which could only be provided by the state. These higher capitalization costs led to a sharp increase in gross government debt. Extra capital requirements by the banking system in 2009 and 2010 contributed to increased market concerns about the sustainability of the fiscal position.

In fact, the deficit, as measured by the general government balance, widened from balance in 2007 to 7.3 % of GDP in 2008 and to 14.1 % in 2009, before it increased to 31.2 % of GDP in 2010 due to the substantial government support to Irish banks. Excluding support to the banking system, the deficit was 11.5 % of GDP in 2009 and 10.9 % of GDP in 2010. The public funds aimed at rescuing the Irish banking sector represented 12.5 % of Ireland's GDP. As shown in Table 1, Irish public debt soared from 24.8 % of GDP in 2007 to 92.5 % in 2010. Finally, the Irish government had to request assistance from the EU and IMF in November 2010 to avoid default on its public debt.

The Irish government agreed a multiyear funding deal with the EU and the IMF. The program provided funding commitments of €67.5 billion. Ireland made steady progress in reducing its fiscal deficit and meeting the program's fiscal targets. In spite of fiscal contraction, economic growth was resumed thanks to a reorientation of the economy away from domestic demand and toward exports.

However, economic growth did not generate increases in employment and the relative success of Ireland in regaining competitiveness partly reflects the depressed state of its labor market. At the end of 2013, the rate of unemployment was still 12.1 %, while it had been only 4.5 % in July 2007.

7.4.2 The Case of Iceland

Although it has many features in common with the Irish one, Iceland's case has some particularities. The first one is that Iceland does not belong to the Eurozone. Property lending was neither as central to the Icelandic case. Access to international financial markets was, for banks, the principal premise for their large growth.

Because of their—at that time—good credit rating, they had access to European markets; when funding in European debt securities markets became more difficult, the debt securities market in the USA opened up.

That opening was largely due to CDOs. Icelandic bank securities were packaged into these CDOs because of the high credit rating of the Icelandic financial undertakings, according to rating agencies. Further, Icelandic banks paid high interest rates considering that credit rating.

Thanks to the injection of foreign funds, the Icelandic financial system became far too large relative to the size of the Icelandic economy. On the other hand, the largest owners of all the large banks had abnormally easy access to credit at the banks they owned. The examination conducted by the Icelandic Special Investigation Commission showed that in the three largest banks, their principal owners were among the largest borrowers. The money market funds under the aegis of the management companies of these banks invested a great deal in securities connected to the owners of the banks.

Bank risk was highly concentrated. This applied both to lending to certain groups within each bank as well as to how the same groups also constituted high-risk exposures in more than one bank. Moreover, the banks had invested funds equivalent to more than 25 % of their capital bases in their own shares. In addition, each of them invested in other banks' shares. It seems that the financing of owners' equity in the Icelandic banking system had been based, to such a great extent, on borrowing from the system itself. The shares owned by the largest shareholders of the banks were especially leveraged.

The onset of the international financial crisis in 2007 found Icelandic banks increasingly dependent on funding through international financial markets. Total deposits in the banks kept shrinking from the autumn of 2007 until their collapse. Collateralized loans, mostly from the Central Bank of Ireland and the European Central Bank (ECB), increased substantially in all three banks as the liquidity crisis became more widespread.

When the prices of shares started dropping, all banks purchased their own shares on a large scale. As stated before, the banks held a lot of their own shares as collateral for their lending. With share prices declining, the quality of their loan portfolios would decline. Finally, the Financial Supervisory Authority of Iceland took over the domestic operations of the three largest banks in October 2008.

Outside Iceland, more than half a million depositors (far more than the entire population of Iceland) found their bank accounts frozen when the banks finally collapsed. In August 2009, a bill was passed to pay the UK and the Netherlands more than $5 billion lost in Icelandic deposit accounts. The Icelandic government debt increased from 28.5 % of GDP in 2007 to 70.3 % in 2008 after the takeover of the three largest Icelandic banks.

7.5 The "Old" Indebted Countries: The Case of Greece

As stated before, Greece did not comply with the Maastricht criterion with respect to the budget deficit at the time it joined the Eurozone in 2001. "Creative" statistics allowed it to be admitted into what has been conceived as a very exclusive club. Its debt-to-GDP ratio was already 103.7 in 2001, far above the 60 % Maastricht criterion.[9]

However, it declined to 97.4 in 2003. From then on, it kept increasing until reaching 144.9 in 2010. This reflected the increasing budget deficit Greece's public accounts had shown since 2000. Figure 7.2 shows the expenditure/GDP, revenue/GDP, and deficit/GDP ratios for the period 2000/2011.

Entrance into the Eurozone meant that Greece—as the other members of the Eurozone—gave up one of the tools a country has to reduce its budget deficit: devaluation. In fact, in equilibrium:

$$(I_d - S) + (G - T) = M - X$$

where I_d is domestic investment, S is national saving, G is government expenditure, T is government revenue, and $(M-X)$ stands for current account balance (M are imports and X are exports). A devaluation will reduce the deficit value of $(M-X)$; if the domestic private balance does not change, the government balance will be reduced.[10] The most direct way to do this is by taxing exports, as Argentina did in 2002, where export taxes absorbed a good part of the devaluation effect on exportable domestic prices.

As a matter of fact, Georgantopoulos and Tsamis (2011, 161) find for Greece, during the period 1980–2009, a significant unidirectional causal relationship between exchange rates and budget deficit running from the nominal effective

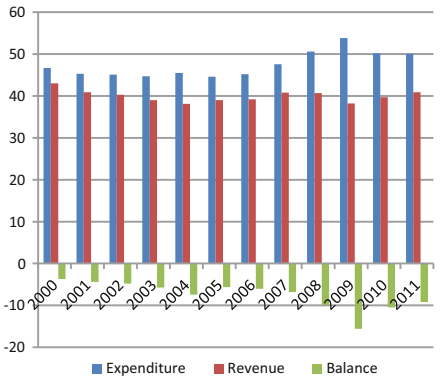

Fig. 7.2 General government expenditure, revenue and deficit 2000/2011 (Percentage of GDP) (*Source*: Eurostat)

[9] Notwithstanding its noncompliance with the Maastricht debt standard, Greece was admitted with the argument that it was expected to be making progress over time toward that goal.

[10] The opposite happens, of course, in the case of a revaluation of the local currency.

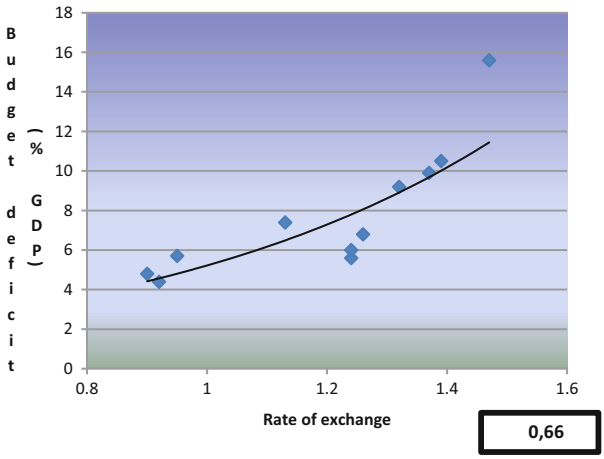

Fig. 7.3 Budget deficit and euro rate of exchange 2000–2011

exchange rate to the budget deficit. Moreover, they concluded that "a significant part of budget deficits' variance is caused by exchange rates since with a seven period lag 61.89 % of [the budget deficit] is explained by [the nominal effective exchange rate] and by the end of the 10-year lag 83.97 % of budget deficits' variance is caused by nominal effective exchange rates".

The continuous revaluation of the euro worsened Greece's budget imbalance after 2000. Figure 7.3 illustrates the relationship between the euro/dollar rate of exchange and the 1-year lagged budget deficit/GDP ratio between 2000 and 2011. This runs in the same direction as the relationship found by Georgantopoulos and Tsamis.

What is the explanation for this positive association between the rate of exchange and budget imbalance? The appreciation of the euro[11] resulted in a loss of external competitiveness in the Greek economy, which led to a persistent deficit in the current account (Fig. 7.4). An appreciation of the real exchange rate increases the purchasing power of domestic incomes in terms of imported goods. More imports and fewer exports result in a slowdown in economic activity. Tax revenues decline, while the government feels compelled to keep or increase public expenditure to make up for the decline in private demand. The budget deficit increases and so does public debt.

Increasing demand for funds by the public sector leads to an increase in interest rates, which depresses again economic activity. According to Fig. 7.2, public revenues have declined since Greece joined the Eurozone; since 2007, public expenditure increased, accelerating the rise in the budget deficit.

[11] The exchange rate between dollar and euro was, in October 2000, 0.85 $/€ and reached in April 2008 1.60 $/€, an appreciation of 88 %.

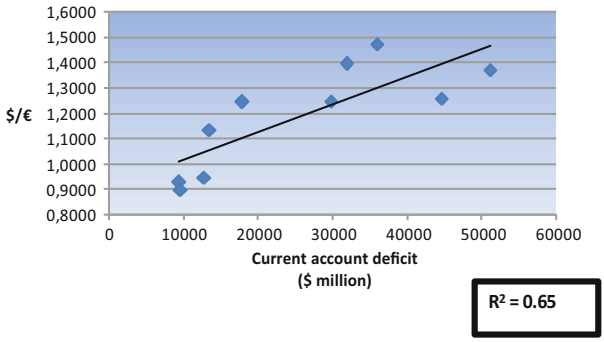

Fig. 7.4 Current account deficit and the euro rate of exchange 2001/2011

However, in the literature related to the "twin deficits hypothesis," it has usually been argued that causality runs from the government budget deficit to the current account, not the other way around.

However, empirical studies are far from conclusive: in some cases, they support the conventional hypothesis;[12] others support the reverse causality running from the current account deficit to the fiscal deficit;[13] some support the Ricardian equivalence that budget and trade deficits are not correlated.[14] And, finally, some find both types of evidence or a bilateral relationship.[15]

In the case of Greece, it is clear that since the introduction of the euro, causality cannot run from the budget deficit to the nominal rate of exchange moreover when the budget deficit variable is introduced with a 1-year lag. The increasing Greek debt was primarily the result of growing budget deficits triggered by the appreciation of the euro and the consequent loss of competitiveness experienced by the Greek economy. This brings us to the issue of regional imbalances raised by Pérez-Caldentey and Vernengo (2012).

7.6 Exchange Rate and Regional Imbalances

The euro area aggregate trade and current account position have always been close to balance, but this only means that the euro rate of exchange is in line with the competitiveness of the core countries of the Eurozone. Many industries in Greece and other peripheral countries are not competitive at that rate of exchange; that is why these countries run increasing current account deficits (see Figs. 7.5 and 7.6).

[12] Abell (1990), Bachman (1992), Piersanti (2000), Leachman and Francis (2002), Cavallo (2005), and Erceg and Guerrieri (2005).

[13] Anoruo and Ramchander (1998), Khalid and Teo (1999), and Alkswani (2000).

[14] Miller and Russek (1989), Dewald and Ulan (1990), Enders and Lee (1990), and Kim (1995).

[15] Mukhtar et al. (2007) and Islam (1998).

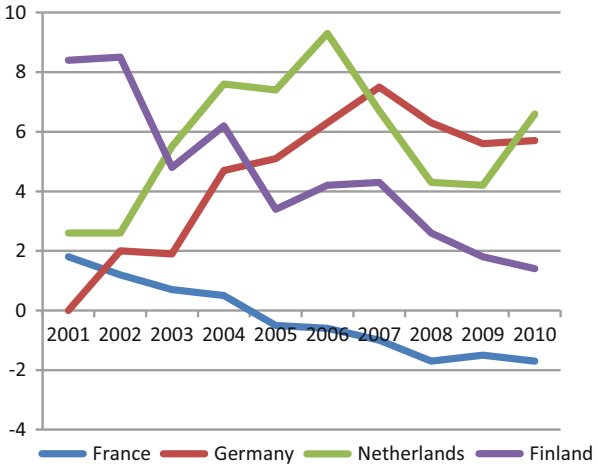

Fig. 7.5 Current account balance in selected EMU countries, 2001–2010 (percentage of GDP): Finland, France, Germany, and the Netherlands (*Source*: Eurostat)

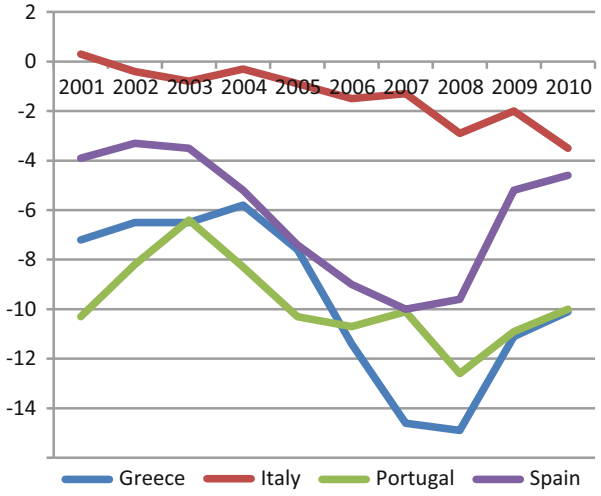

Fig. 7.6 Current account balance in selected EMU countries, 2001–2010 (percentage of GDP): Greece, Italy, Portugal, and Spain (*Source*: Eurostat)

In fact, external imbalances diverge sharply in the euro area: while Germany, the Netherlands, and Finland run significant surpluses, countries in southern Europe run huge deficits (see also Chap. 5, Sect. 5.5).

Coudert et al (2012) compare currency misalignment before and after the launch of euro. They find that the three countries that have been adversely affected by the sovereign debt crisis in 2010–2011, Greece, Ireland, and Portugal, are exhibiting the largest overvaluation of their real exchange rates. On the other hand, it is

worthwhile noting that Germany had run persistent current account deficits during the 1990s which turned into surpluses only after 2000.

The Eurozone reproduces the sort of regional problems that exist within many countries. There is a highly competitive core and a relatively backward periphery.[16]

Therefore, a long-run strategy for regional convergence is needed and, at the same time, a short-run one to smooth the transition process. Although EU regional policy aims at promoting the "harmonious, balanced and sustainable development of the European Union", it has proven up to now to be insufficient to face the specific consequences of the monetary union.

Therefore, the Greek government had to face the outcome of joining the Eurozone and had to take decisions that resulted in a worsening of the heavy indebtedness preexisting at the time of joining the Eurozone.

Katsimi and Moutos (2010) emphasize the role of current account imbalances due to the loss in Greek international competitiveness. However, productivity gaps and external deficits exist within each country. Do all American states have the same productivity? What about East and West Germany? Who cares what their external balances are? A region within a country can run a current account deficit indefinitely as long as there is a transfer of resources from the richer to the poorer regions.

Therefore, this should not be a problem for the Eurozone provided those who, thanks to the Eurozone, benefit of external surpluses are ready to transfer resources to the backward periphery. This is the real issue at stake as far as the productivity gap is concerned. The problem is that the Eurozone is officially a currency union of politically sovereign states and not a common currency area within a political union. This is the original sin in the design of the Eurozone.

Germany's unification process could have been an interesting antecedent to take into consideration. The major economic implication of German economic and monetary union was precisely that East Germany would run a current account deficit with the rest of the country that was financed by transfers from the West. In the case of Germany, the New Länder began with an enormous competitive disadvantage and West Germans were supposed to transfer between 3 and 4 % of GDP per annum to the East (Carlin 1998, 16).

However, no provision was taken in the Eurozone to make up for the short-run negative consequences that peripheral economies could suffer from joining the euro.[17] In fact, when the monetary union was implemented in 1999, the functioning of the single currency was seen as a sort of panacea, making additional policy targeting seem superfluous. However, the result has been an increasing current account deficit for Greece and other peripheral countries. What has not been done before in the form of resource transfers from the richer to the poorer countries of the

[16] The role of structural imbalances in the European crisis, reflected by high current account deficits of the periphery countries and matching surpluses in core countries, is extensively discussed in Moro (2014). See also Chap. 5.

[17] I refer here to the specific consequences of joining the euro, which are independent of those following the EU integration to make up for which there were significant resource transfers, particularly through structural funds.

Eurozone has to be done in the way of helping these countries restructure their debts.

Somebody may argue that internal devaluation is the way through which Greek could become competitive.[18] Downward price and wage inflexibility make this a very painful and unbearably long process.

Sinn (2013) reminds us that Keynes and Friedman alike coincided on the phenomenon of downward price stickiness. Internal devaluation did not work in Argentina, which, after 3 years of an ever-deepening recession/depression, had no alternative but to default and devalue its currency. It does not seem to be a valid alternative for Greece either.

The often mentioned as successful internal devaluation cases—Ireland and the Baltic countries—suffered an output loss of between 15 and 25 %, while unemployment jumped to something between 10 and 20 % (EEAG 2013, p. 66). Given the large economic costs associated with these strategies, it is far from clear whether these experiences should qualify as success stories and could be extended to bigger and more complex economies.

In spite of the relative success of 2012 Greek debt restructuring, which implied that private sector bondholders reduced their nominal claims by 75 %, at the end of 2013 the debt-to-GDP coefficient has reached a peak of 175 %. Through the successive rescue packages, Greece received huge amount of funds borrowed from official institutions. The result was that 70 % of the debts were owed to "official" creditors (Eurozone states, ECB, and the IMF).

7.7 Is Argentina a Valid Example for Greece?

Some analysts have argued that the only way out of the crisis for Greece is to do what Argentina did in 2002. Then Argentina applied the 3D formula: default, devaluation, and de-dollarization. In the case of Argentina, devaluation was a necessary component of the crisis solution because most of its public debt was denominated in foreign currency.

This is not the case of Greece where most of the government debt is denominated in euro that is the same currency in which government revenues are denominated. So, the issue is just to adjust revenues and expenditures. Essentially, it means to reduce the debt burden to an amount compatible with a reasonable fiscal primary surplus target. Restructuring the debt in a way that allows the Greek economy to resume growth is the only sound solution. Devaluation, which in the case of Greece and other euro countries means to leave the Eurozone, does not seem to be a necessary step to solve the debt problems. On the contrary, it may only aggravate the country's economic situation.

[18] Sinn (2013) mentions that, according to a Goldman Sachs study, relative prices in Greece have to come down between 25 and 35 % to achieve external debt sustainability.

In Argentina, devaluation—that was accompanied by a necessary internal debt de-dollarization—resulted in a 50 % of the population falling below the poverty line, while unemployment soared to 22 % of the labor force. Of course, depressed real wages allowed the country to recover competitiveness. Increased exports and depressed imports allowed the country to earn the foreign currency it badly needed to meet the service obligations of its foreign debt.

In fact, it was not enough for Argentina to have a fiscal surplus; it was also necessary to have a current account surplus so the local currency-denominated fiscal surplus could be transformed into world money to service the foreign debt. But once again, this is not the case of Greece whose debt problem is due to a fiscal gap not to a foreign currency gap. Definitely, Argentina is a valid example for Greece only as far as debt relief is concerned.

7.8 The Case of Portugal

In the second half of the 1990s, Portugal showed impressive economic results. Its GDP per capita grew faster than the EU average and Portugal fulfilled the Maastricht criteria for the monetary union. However, by 2000 Portugal had already become the first country to be subjected to the EU's Excessive Deficit Procedure specified in the Stability and Growth Pact legislation and again in 2005 when its deficit reached more than 6 % of GDP.[19]

As in the case of Greece, the continuous revaluation of the euro worsened Portugal's budget imbalance after 2000. Figure 7.7 illustrates the positive relationship between the euro/dollar rate of exchange and the 1-year lagged budget deficit/GDP ratio between 2001 and 2011.

However, the financial crisis worsened Portugal's economic situation. Its impact was first felt in Portugal at the beginning of 2008, with a severe credit squeeze, a reduction in banks' abilities to access capital markets, and the collapse of two banks: BPN, which was nationalized in November 2008, and BPP, which was intervened in by the state and finally went bankrupt in 2010.

The Portuguese government reacted by implementing an "Initiative to Strengthen Financial Stability", which focused on improving the information and transparency obligations of financial institutions, increasing deposit guarantees, granting state guarantees to banks, and strengthening their financial soundness.

These measures—particularly the nationalization of BPN and the intervention in BPP—implied an increase in public deficit and public debt. The international financial crisis, shrinking exports, declining investment (including in construction), and dampening consumer spending, all contributed to the contraction of Portugal's economy.

[19] Indeed, throughout the entire democratic period following the 1974 revolution, Portugal never had a surplus in the state budget.

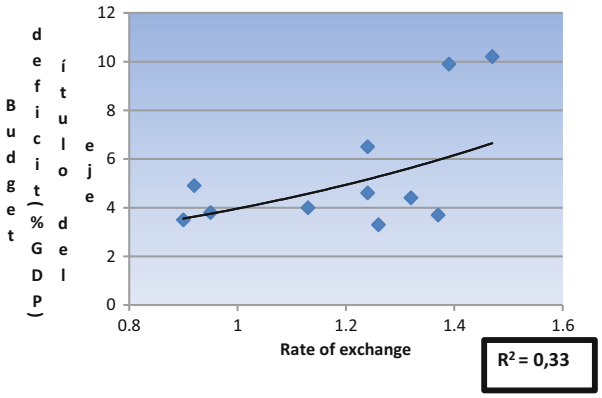

Fig. 7.7 Portugal's budget deficit and the euro/dollar rate of exchange, 2001/2011

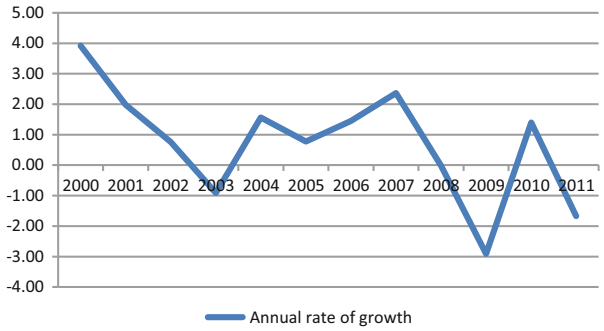

Fig. 7.8 Portugal: annual rates of growth. 2000–2011 (*Source*: Eurostat)

Portugal's already low rate of growth became negative in 2008 and 2009 (Fig. 7.8). The first reaction to the crisis was to stimulate demand. This increase in public expenditure on top of the measures taken to preserve the Portuguese financial system meant that the public deficit soared to 10.2 % in 2009 (Fig. 7.9) and Portugal's public debt-to-GDP ratio jumped from 68.3 % in 2007 to 93.3 % in 2010. However, public accounts improved in 2011 after a series of tax hikes and salary cuts for public servants took place.

These measures allowed Portugal, in the first half of 2011, to receive a €78 billion IMF/EU bailout package in a bid to stabilize its public finances, as Greece and Ireland had done before. In 2012, the Portuguese government used €3 billion from the bailout package to rescue Portugal's largest listed bank by assets, Millennium BCP.

By the end of 2012, Portugal had regained access to financial markets when the state managed to renew one-third of the outstanding bonds at a reasonable yield level (5.12 %). The bailout funding program was supposed to run until June 2014, but at the same time it requires Portugal to regain complete bond market access by September 2013. While the budget deficit for 2012 was forecasted to end at 5 %, the

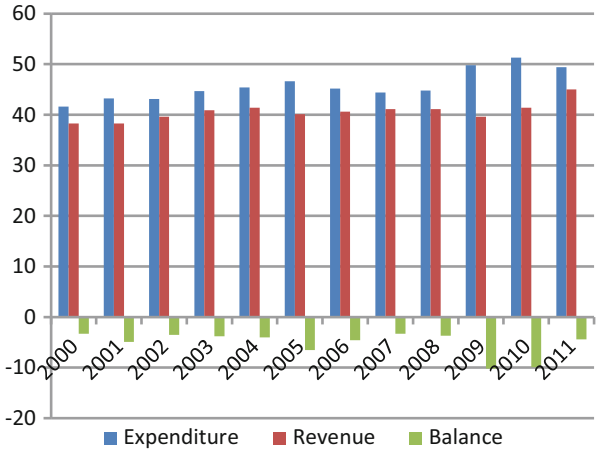

Fig. 7.9 Portugal: general government expenditure, revenue, and balance, 2000–2011 (percentage of GDP) (*Source*: Eurostat)

country is expected to reduce the budget deficit to a level below 3 % of GDP in 2014.

7.9 Spain: A Special Case

The weight of Spain's public debt as of 2011 was substantially lower than the weight of the debt of the UK and of Germany. Spain's government debt ratio was just 68.5 of GDP against 85.7 in the UK and 81.2 in Germany, not to mention 165.3 in Greece and 120.1 in Italy. Why was, then, Spain involved in the European financial crisis? There is just one single reason: because it evoked the Irish case. In 2007, the public debt-to-GDP ratio in Ireland was only 24.8. However, it soared to 65.2 in 2009.

As in Ireland, construction had been a fast-growing industry in Spain. It expanded at a rate of 5 % per year between 1996 and 2007. Between 1998 and 2007, the number of housing units grew 30 % (Arellano and Bentolila 2009, 28). House prices increased dramatically and people expected the process to go on without an end. Real house prices—adjusted for the change in the consumer price index—increased by 127 % between 1996 and 2007 (André 2010, 9).

Therefore, real estate became the preferred destination for savings. Tax benefits stimulated even greater demand for real estate, biasing household investment to housing in place of other types of assets.[20] This process was reinforced after 1999.

After becoming a member of the Eurozone, Spain benefited—as in the case of Greece and other southern Europe countries—from a drastic reduction in interest rates. The flight of capital from the equity markets that occurred between 2000 and

[20] Altogether, 15 % of mortgage payments are deductible from personal income taxes in Spain.

2003 was primarily funneled to the real estate sector. Loans became available at lower interest rates. Therefore, businesses and individuals saw their borrowing capacities increase; this stimulated the demand for house building. Housing became a shelter for assets: real estate investments promised attractive capital gains.

Houses were bought because prices were expected to rise and prices rose because there were more and more purchases increasingly financed by loans. The construction market flourished. Banks offered 40-year and, later, even 50-year mortgages. The construction sector increased its share of Spanish GDP from 6.9 % in 1995 to a high of 10.8 % in 2006. In 2007, construction accounted for 13.3 % of total employment. However, that year, coinciding with the global economic crisis, the real estate bubble burst. When international liquidity—until then cheap and plentiful—started lacking, the Spanish real estate market entered a crisis. Prices started declining in 2008.

Regional loans and savings banks, the so-called *cajas*, were very active in the real estate market. They owned 56 % of the country's mortgages in 2009. They were the first victims when the market crashed that year: debtors fell into bankruptcy and bad loans dramatically increased. In March 2009, the Spanish government announced its first bailout of a *caja*.

After that, more bank bailouts were announced by the Spanish government. While these government bailouts kept these banks from going bankrupt, investor confidence in the Spanish economy sunk even lower. Many real estate developers avoided bankruptcy only because banks kept permitting them to refinance their loans. In this way, loans were reported as performing. In May 2012, Bankia, a bank that resulted from the merger of several *cajas*, had to be bailed out by the government. At that time, it was the fourth bank by size in the Spanish ranking of banking institutions.

Figure 7.10 shows the evolution of general government expenditure, revenue and deficit between 2000 and 2011. It shows that Spain had a small deficit between 2000 and 2004, far below the ceiling of 3 % of GDP that the European Stability and Growth Pact established for member states after the introduction of the euro on January 1, 1999. From 2005 to 2007, the increase in revenues allowed the government to run a surplus. The situation abruptly reversed in 2008 precipitated by a significant decrease in revenues, a decline that deepened in the following years, as a reflection of the international financial crisis.

As can be seen in Fig. 7.11, the rate of growth plummeted in 2008 and became negative in 2009 and 2010. The contraction in international liquidity supply was followed by a restriction on credit and subsequently by a sharp decline in construction and employment. The increase in unemployment meant a rise in spending on unemployment and other social benefits. The bailout of several *cajas* was another source of increase in public expenditure. On the other hand, the decline in GDP was followed by a weakening of public revenues, especially those linked with the real estate sector.

Therefore, the swift deterioration of Spain's public finance flashed warning lights on the capacity of its government to face the services of its increasing public

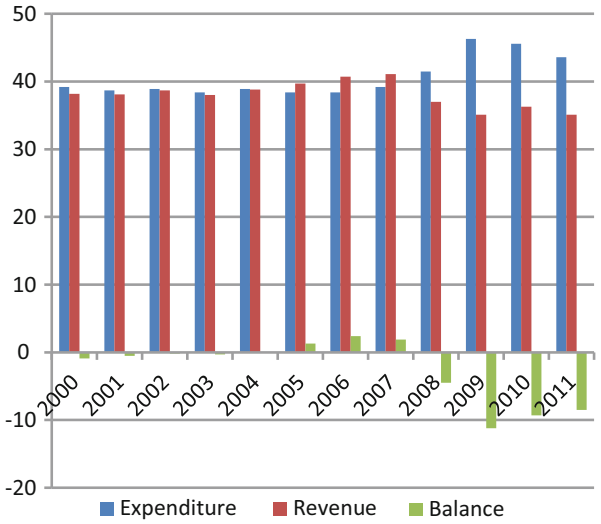

Fig. 7.10 Spain: general government expenditure, revenue, and balance, 2000–2011 (percentage of GDP) (*Source*: Eurostat)

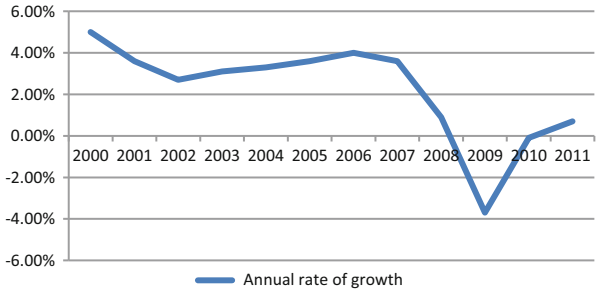

Fig. 7.11 Spain: annual rates of growth 2000–2011 (*Source*: INE)

debt, which had exceptionally short maturity structures. Spain was following Ireland's steps with a 3-year delay.

7.10 Italy: A Different "Old" Debtor

The Italian government was highly indebted long before the crisis outburst. In 2007, the general government debt-to-GDP ratio was already 103.1, second only to Greece, and well above the 60 % Maastricht criterion. However, nobody worried at that time for the Italian public debt and the Italian government had no problem refinancing it. Between 2007 and 2010, it only increased 15 %.

However, the American financial crisis deeply affected the Italian economy. The transmission mechanism was the contraction in the interbank loan market that was the immediate consequence of the crisis. Banks refused to lend money to each other

because of a lack of liquidity and the uncertainty about the financial soundness of borrowers (see Chap. 6, Sects. 6.5, 6.6, and 6.7).

Besides the contraction in liquidity, Italian banks were also affected by their close links with central and eastern European countries where they had built a network of branches and affiliated banks. There was a risk of the collapse or illiquidity of this part of the network.

The government responded to the risk of banking crisis by guaranteeing bank deposits to a maximum of €103,000 in the event of a bankruptcy. This avoided a bank run on deposits. However, banks reacted to the liquidity crisis by reducing credit to clients and consumers and raising the amount of collateral required for new loans. These measures affected investment and consumption. Bugamelli et al (2009, 11) estimate that in the period from January 2008 to June 2009, production fell by more than 35 % in sectors such as electrical machinery, metallurgy, and cars. The GDP rate of growth became negative in 2008 and 2009 (Fig. 7.12). Growth resumed in 2010, but was snuffed out in 2011.

The reduction in economic activity cut the amount of tax collected and anti-cyclical policies increased public expenditure. As a result, there was a significant increase in the public deficit (Fig. 7.13).

After Berlusconi stepped down, the new Prime Minister Mario Monti launched a deep austerity plan including measures such as increasing the retirement age, raising property taxes, simplifying the operation of government agencies, and going after tax evaders.

In contrast to most European countries, the banking system in Italy practically did not resort to any public help between 2008 and 2011. Italian banks mainly faced the crisis by raising funds in capital markets. Italy's banking system required very low support from the ECB (Table 7.2).

The results of the EU-wide stress test carried out by the European Banking Association in 2010 and 2011 show that the included Italian banks successfully passed the test. Moreover, the Italian banking system seems to have low exposure to government debt; it holds less than 10 % of domestic public debt—against more than 40 % in the case of Spanish banks—as well as low exposure to foreign sovereign risk, which represents only 23 % of the total government debt Italian banks hold (Bolton and Jeanne 2011).

Therefore, in contrast to Spain, Italy's problem seems to be essentially located in its public debt, whose ratio to GDP, although high, is no worse than it was 20 years ago, when nobody worried about it. In fact, the country's debt first hit 120 % of GDP in 1993, after the public deficit reached 10.37 % of GDP in 1992.

After the exchange rate turmoil that hit the European monetary system in 1992, Italy devalued the lira. Italian trade performance improved as import growth slowed, while export growth remained relatively constant. Therefore, Italy went into the Eurozone with a large surplus on its trade accounts. The high levels of Italian public debt only became a problem when, in the context of the 2011–2012 European economic climate, the private sector began to lose confidence in the ability of the Italian state to service its debt.

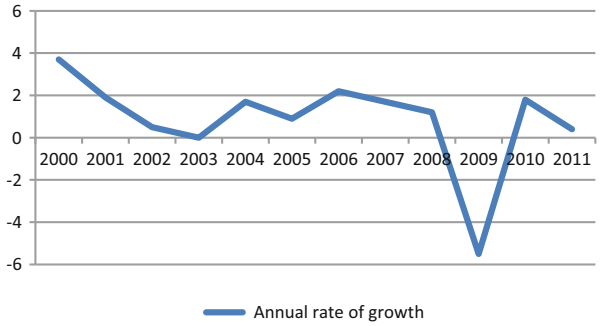

Fig. 7.12 Italy: annual rates of growth 2000–2011 (*Source*: Eurostat)

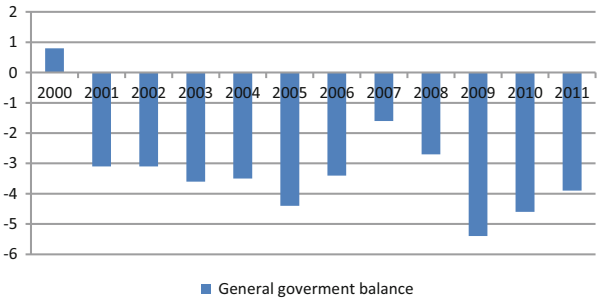

Fig. 7.13 Italy: general government balance 2000–2011 (percentage of GDP) (*Source*: Eurostat)

Table 7.2 Funds provided by the ECB to national banking systems as of December 2011: percentage of GDP

Country	%
Ireland	87.79
Greece	61.46
Portugal	27.65
Netherlands	26.9
Spain	16.83
Italy	12.65
France	10.89
Belgium	9.54
Austria	4.5
Germany	2.16

Source: OECD

7.11 Is There Any Role the Euro Rate of Exchange Can Play in the Adjustment Process?

Some scholars have argued that a way to alleviate the debt crisis might be euro devaluation. This would improve external competitiveness for Europe as a whole and for the indebted countries in particular. A weaker euro would foster an export-led growth process.

The first issue, however, is how to push down the euro. In spite of the debt crisis, the euro's exchange rate remained remarkably stable. This may be attributed to the fact that the current account balance for the total of Eurozone countries as a whole is in surplus.

Anyway, after the unconventional monetary policies of quantitative easing decided by the ECB in January 2015, a remarkable devaluation of the euro has followed (see Chap. 11, Sects. 11.4.4 and 11.4.5). After a devaluation, the depressed economies of southern Europe will improve their exports and contract their imports. Export-related and import-substitution industries will expand and this expansion will be transmitted to the rest of the economy. Growing activity will provide higher revenues to governments to pay for the debt.

Euro depreciation would push the German trade surplus even higher and cause some inflationary pressures in those few European countries that are still near full employment. This will help close the gap between German and other European labor costs as an internal devaluation in southern Europe countries would do.

So far so good. However, there is a main objection to this reasoning. Euro depreciation would be a species of beggar-my-neighbor policy. Whereas one country can successfully practice such a policy, competitive devaluations may be the result when it is pursued by a substantial number of countries as it is the case of the EU.

Nevertheless, the impact of euro devaluation on the global market may be rather limited. Most of the international trade of European countries is with European partners. The northern euro members' historically large current account surpluses and southern Europe's sizable current account deficits are two sides of the same coin. Therefore, euro devaluation may be part of the solution although by no means is the solution to the sovereign debt crisis.

7.12 Summary and Conclusions

The European indebtedness process does not accept a unique explanation. Of course, it may be argued that the European and the American crises are just chapters in a *global* credit bubble (McKinsey Global Institute 2011) or the consequences of a global money or savings glut. However, this explains little except that Europeans and Americans have had access to cheap money during the past 15 years.

This chapter shows that among the most indebted European countries, there are at least two different groups. One is made up of "old" debtors, whose debt-to-GDP ratios slightly grew between 2001 and 2007. This means that in these countries the debt problem antecedes the introduction of the euro. A second group of "new" debtors comprises those countries whose debt suddenly increased as a result of the 2007–2009 financial crisis. These are the cases of Ireland and Iceland.

Spain is a special case whose debt-to-GDP ratio was substantially lower than the weight of the debt of the UK and Germany, not to mention Greece or Italy. However, its public debt was severely punished by the market because of the

doubts about its banking system's health, which raised suspicion that it might require governmental support, as in the cases of Ireland and Iceland.

Therefore, although it is true that the US financial crisis triggered the European debt crisis, it did it through different channels. In the cases of Ireland and Iceland, through a severe credit squeeze and a reduction in banks' abilities to access the capital markets. The drain of liquidity experienced by the banking system precipitated governmental intervention with the consequential jump in public debt.

However, in the cases of Greece, Italy, and Portugal, the American financial crisis mainly brought attention upon the fiscal situation of countries already heavily indebted, who could face growing difficulties to roll over their debts in an increasing climate of fear and distrust.

Far from helping to reverse their preexisting fiscal imbalances, entrance into the Eurozone had aggravated them for Greece and Portugal. In fact, the continuous revaluation of the euro worsened their budget imbalances after 2000, increasing their public debt. A positive association between the rate of exchange and budget imbalance was found for both countries. After the debt crisis burst, both countries found themselves without access to capital markets and had to resort to IMF/EU bailout packages in an attempt to stabilize their public finances.

In 2007, Italy's general government debt-to-GDP ratio was 103.1, second only to Greece, and well above the 60 % Maastricht criterion. However, nobody worried at that time for the Italian public debt and the Italian government had no problem in refinancing it. Moreover, it only increased 15 % between 2007 and 2010. Therefore, the Italian debt crisis is a clear example of the change in humor in financial markets after the American financial crisis.

The announcement by the President of the ECB, in mid-2012, that the ECB would have done "whatever it takes" to preserve the euro and to struggle the crisis (see Chap. 6, Sect. 6.5) and the following purchase of sovereign bonds of the area's stricken economies with a quantitative easing monetary policy (see Chap. 11, Sect. 11.4.5) calmed the waters, allowing European authorities to buy time to figure out how they could get the area out of the debt crisis.

As Lane (2011, 60) points out, a country with a high level of sovereign debt is vulnerable to increases in the interest rate. "This risk can give rise to self-fulfilling speculative attacks: an increase in perceptions of default risk induces investors to demand higher yields, which in turn makes default more likely". The opposite happens if default risk is perceived to be low. So, we are in the presence of a multiple equilibrium problem. The announcement by the ECB acted as a signal to push the system to the "good" equilibrium.

On top of this, a new European Stability Mechanism was created to replace the European Financial Stability Facility and the European Financial Stabilization Mechanism. This offered bank recapitalization packages directly to the financial sector, rather than doing so via national treasuries as in the past with existing EU funding programs. In parallel, a Single Supervisory Mechanism was established for the oversight of credit institutions.

Although the financial crisis has temporarily calmed down, it has not been solved. As stated above, what has not been done before in the form of resource

transfers from the richer to the poorer countries of the Eurozone will have to be done now in the way of helping these countries reduce the burden of their debts if the monetary union is to be saved. This is nothing else but the application of the principle of solidarity which requires the stronger member countries to support the weaker ones in times of severe crisis.

One way of doing this may be by implementing the mechanism of the European redemption pact proposed in the 2011 annual report of the German Council of Economic Experts (GCEE).[21] According to it, debt amounts above the Maastricht reference value of 60 % of GDP would be transferred to a common redemption fund subject to joint liability. Each country would be obliged to autonomously redeem the transferred debt over a period of 20–25 years. This will extend debt maturity and lower interest rates for highly indebted countries. A simulation exercise of the redemption plan for Italy[22] shows this proposal is feasible at least for this highly indebted country: assuming an average real rate of growth of 1 % per year, the debt transferred to the redemption fund is fully redeemed after 23 years.

Countries like Germany, the Netherlands, and Finland will presumably have to pay higher interest rates than at present as a consequence of the liability risk they will face. In fact, they would have to meet more obligations if eventually some European borrower defaults and cannot service its debt.

In this respect it is worthwhile remembering the 1953 London Debt Agreement that relieved the young federal republic of its pre- and postwar external debts. This debt relief represented about 50 % out of its total external debt at that time, roughly 10 % of West Germany's GDP in 1953, and 80 % of its export earnings that year. This debt restructuring marked the transition from critical indebtedness to a situation where debt was no longer an obstacle to economic and social development.[23]

In 2001 the European Union created the EU Solidarity Fund to respond to major natural disasters; the European redemption fund may be the response to a major economic disaster—the debt crisis—and would allow keeping the monetary union alive. In exchange, it should be ensured that the structural budget deficit for each country which has transferred debts to the redemption fund does not exceed the threshold of 0.5 % of GDP, as the GCEE proposed. If a member country fails to honor its commitments, the transfer of the debt to the fund would immediately be stopped and the collateral lost, as also was proposed by the GCEE.

A scheme of mutualization of financial risk may create moral hazard. Mechanisms to contain moral hazard need to be introduced in order to avoid that some governments take more risk than they would otherwise. Different alternatives are broadly discussed in the report by the Expert Group on Debt Redemption Fund and Eurobills (2014). It is clear that most of the solutions to the crisis would be much easier to implement if Europe were a single country with a single government. This

[21] GCEE (2011, third chapter, 107).

[22] Parello and Visco (2012, 5–8).

[23] See Kaiser (2013) for a discussion of the arguments on the comparability of the London agreement with current debt relief operations.

shows that institutional reforms are badly needed in order to develop a governance structure that can handle the complex challenges posed by the monetary union.

References

Abell JD (1990) Twin deficits during the 1980's: an empirical investigation. J Macroecon 12:81–96

Alkswani M (2000) The twin deficits phenomenon in petroleum economy: evidence from Saudi Arabia. Paper presented at the seventh annual conference, economic research forum (ERF). Available via http://www.erf.org.eg/CMS/uploads/pdf/1185358196_finance1.pdf

André C (2010) A bird's eye view of OECD housing markets. OECD economics department working paper no. 746. Available via http://www.cchpr.landecon.cam.ac.uk/Conference2010/Downloads/Papers/Plenary/Andre%20C%20Paper.pdf

Anoruo E, Ramchander S (1998) Current account and fiscal deficits: evidence from five developing economies of Asia. J Asian Econ 9:487–501

Arellano M, Bentolila S (2009) La burbuja inmobiliaria: causas y responsables. La Crisis de la Economía Española: Lecciones y Propuestas, FEDEA, pp 28–31. Available via http://www.crisis09.es/PDF/la-crisis-de-la-economia-espanola.pdf

Bachman DD (1992) Why is the US current account deficit so large: evidence from vector autoregressions. South Econ J 59:232–240

Bolton P, Jeanne O (2011) Sovereign default risk and bank fragility in financially integrated economies. IMF Econ Rev 59:162–194. http://www.palgrave-journals.com/imfer/journal/v59/n2/abs/imfer20115a.html

Bugamelli M, Cristadoro R, Zevi G (2009) La crisi internazionale e il sistema produttivo italiano: un'analisi su dati a livello di impresa. Occasional Papers 58, Banca d'Italia, Rome. Available via http://www.bancaditalia.it/pubblicazioni/econo/quest_ecofin_2/QF_58

Carlin W (1998) The new east German economy: problems of transition, unification and institutional mismatch, University College London. Available via http://www.ucl.ac.uk/~uctpa36/East%20Germany%203%20problems.pdf

Cavallo M (2005) Government consumption expenditures and the current account. Federal reserve bank of san francisco working paper 2005–03. Available via http://www.frbsf.org/publications/economics/papers/2005/wp05-03bk.pdf

Coudert V, Couharde C, Mignon V (2012) On currency misalignments within the euro area. Center d'études projectives et d'informations internationales, CEPII, No. 2012–07. Available via http://www.cepii.com/PDF_PUB/wp/2012/wp2012-07.pdf

Dewald WG, Ulan M (1990) The twin deficit illusion. Cato J 10:689–707

EEAG (2013) The EEAG report on the European economy 2013. CESifo, Munich

Enders W, Lee BS (1990) Current account and budget deficits: twins or distant cousins? Rev Econ Stat 72:373–381

Erceg C, Guerrieri L (2005) Expansionary fiscal shocks and the trade deficit. Computing in economics and finance, Society for Computational Economics

Expert Group on Debt Redemption Fund and Eurobill (2014) Final report. Available via http://ec.europa.eu/economy_finance/articles/governance/pdf/20140331_report_en.pdf

Feldstein M (2012) The failure of the euro. Foreign affairs, January–February. Available via http://www.foreignaffairs.com/articles/136752/martin-feldstein/the-failure-of-the-euro

Georgantopoulos AG, Tsamis A (2011) The macroeconomic effects of budget deficits in Greece: a VAR-VECM approach. Int Res J Financ Econ 79:156–166

German Council of Economic Experts (2011) Annual report 2011/12. Assume responsibility for Europe, Wiesbaden

Gianviti F, Krueger A, Pisani-Ferry J, Sapir A, von Hagen J (2010) A European mechanism for sovereign debt crisis resolution: a proposal, Bruegel. Available via http://aei.pitt.edu/15123/1/101109_BP_Debt_resolution_BP_clean_01.pdf

Governor of the Central Bank of Ireland (2010) The Irish banking crisis regulatory and financial stability policy 2003–2008. Available via http://www.financialregulator.ie/press-area/pressreleases/Pages/TheIrishBankingCrisis,RegulatoryandFinancialStabilityPolicy2003%E2%80%932008.aspx

Honohan P (2010) The Irish banking crisis regulatory and financial stability policy 2003–2008. Report to the Irish minister for finance by the governor of the central bank. Available via http://www.karlwhelan.com/Papers/Whelan-IrelandPaper-June2013.pdf

Islam MF (1998) Brazil's twin deficits: an empirical examination. Atl Econ J 2:121–128

Kaiser J (2013) One made it out of the debt trap. Lessons from the London debt agreement of 1953 for current debt crises, Friedriech Ebert Stiftung. Available via http://library.fes.de/pdf-files/iez/10137.pdf

Katsimi M, Moutos T (2010) EMU and the Greek crisis. Eur J Polit Econ 26(4):568–576

Khalid AM, Teo WG (1999) Causality tests of budget and current account deficits: cross-country comparisons. Empir Econ 24:389–402

Kim KH (1995) On the long-run determinants of the US trade balance: a comment. J Post Keynesian Econ 17:447–455

Lane PR (2011) The Irish crisis, IIIS discussion paper no. 356. Available via http://www.tcd.ie/iiis/documents/discussion/pdfs/iiisdp356.pdf

Leachman LL, Francis B (2002) Twin deficits: apparition or reality? Appl Econ 34:1121–1132

McKinsey Global Institute (2011) Debt and deleveraging: the global credit bubble and its economic consequences (Updated Analysis). Available via http://www.mckinsey.com/insights/mgi/research/financial_markets/debt_and_deleveraging_the_global_credit_bubble_update

Miller SM, Russek FS (1989) Are the twin deficits really related? Contemp Policy Iss 7:91–115

Moro B (2014) Lessons from the European economic and financial great crisis: a survey. Eur J Polit Econ 34(Supplement):S9–S24, June

Mukhtar T, Zakaria M, Ahmed M (2007) An empirical investigation for the twin deficits in Pakistan. J Econ Coop 28(4):63–80

Parello CP, Visco V (2012) The European redemption fund: a comparison of two proposals. MPRA 42874:5–8

Pérez-Caldentey E, Vernengo M (2012) The euro imbalances and financial deregulation: a post-Keynesian interpretation of the European debt crisis. Levy economics institute of bard college working paper no. 702. Available via http://www.levyinstitute.org/pubs/wp_702.pdf

Piersanti G (2000) Current account dynamics and expected future budget deficits: some international evidence. J Int Money Financ 19(2):255–271

Reinhart CM, Rogoff KS (2008) This time is different: a panoramic view of eight centuries of financial crises. NBER working paper no. 13882. Available via http://www.nber.org/papers/w13882.pdf

Sinn HW (2013) Austerity, growth and inflation. Remarks on the Eurozone's unresolved competitiveness problem. CESifo working paper no. 4086

Véron N (2012) Financial reform after the crisis. In: Eichengreen B, Park B (eds) The world economy after the global crisis. A new economic order for the 21st century. World Scientific Studies in International Economics, Singapore, Chapter 2

Whelan K (2013) Ireland's economic crisis. University College, Dublin